Drona JEE 2017

English:

Antonyms, Synonyms, Vocabulary, Word Formation, And sentence formation.

Mathematics:

Trigonometry, permutation and combination, probablity theory, finite series, coordinate geometery and calculus.

Physics :

Mechanics, Electromagnetic fields, circuits, thermodynamics ans statiscal physics.

Section-I English: 30 marks

1. Antonym of Foremost:

    A. Hindmost

    B. Unimportant

    C. Disposed

    D. Mature

2. Antonym of Divided:

    A. United

    B. Dignified

    C. Separated

    D. Isolated

3. Synonym of MASSIVE:

    A. Lump sum

    B. Huge

    C. Little

    D. Gaping

4. Synonym of LIBERAL :

    A. Broad-minded

B. Generous

C. Visionary

D. Imaginative

5. Synonym of SECURITY :

A. Boldness

B. Safety

C. Fearlessness

D. Confidence

6. Find the error: The capital of Yemen / is situating / 2190 meters above / the sea level.

A. The capital of Yemen

B. is situating

C. 2190 meters above

D. the sea level

7. Find the error: Mr Rahul/ has purchased / new furnitures from Metro-Mall.

A.Mr Rahul

B.has purchased

C.new furnitures from Metro-Mall

D.No Error

8. She treated/ me as though / an old friend.

A. She treated

B. me as though

C. an old friend

D. No error

9. I _____ swim quite well when I was younger.

A. can

B. could

C. must

D. should

10. The teacher drew a diagram showing how the blood flows _____ the heart.

    A. about

    B. under

    C. over

    D. through

11. Choose the part with error:

    A. A number of teams

    B. is taking part

    C. in the world cup

    D. No error

12. Some of the luggage .... not yet arrived.

    A. has

    B. have

    C. is

    D. are

13. We didn't .... the programme to be such a huge success.

    A. Accept

    B. Except

    C. Expect

    D. Access

14. Convert to indirect speech: I said to him, "Why are you working so hard?"

    A. I asked him why he was working so hard.

    B. I asked him why was he working so hard.

    C. I asked him why had he been working so hard.

    D. I asked him why he had been working so hard.

15. Convert to indirect speech: Seeta said to me, " Can you give me your pen ?"

    A. Seeta asked me can I give her my pen.

    B. Seeta asked me if I can give me your pen.

    C. Seeta asked me if I could give her my pen.

    D. Seeta asked me if i could give her my pen.

16. Convert to passive voice: The boys were playing Cricket.

    A. Cricket had been played by the boys.

    B. Cricket has been played by the boys.

    C. Cricket was played by the boys.

    D. Cricket was being played by the boys.

17. Convert to passive voice: They will demolish the entire block.

    A. The entire block is being demolished.

    B. The entire block will be demolished by them.

    C. The entire block will have to be demolished by them

    D. The block may be demolished entirely.

18. Convert to active voice: This shirt cannot be worn by me any longer.

    A.I cannot wear this shirt any longer.

    B.Wearing of this shirt any longer is not possible.

    C.This shirt is too worn out any longer.

    D.This worn out shirt cannot be worn any longer.

19. Convert to active voice: He was congratulated by his teacher on his brilliant success in the recent examination.

    A. He congratulated his teacher on his brilliant success in the examination.

    B. His teacher congratulated him for his brilliant success in the recent examination.

    C. His teacher congratulated him on his brilliant success in the examination.

    D. His teacher congratulated him.

20. Find the error: She'll pay you / as soon as she / receive the parcel.

A. She'll pay you

B. as soon as she

C. receive the parcel

D. No error

21. Antonym of Widely :

A.Spaciously

B.Succinctly

C. Narrowly

D. Limitedly

22. I cannot concentrate, here is too much _____.
    A. detraction
    B. distraction
    C. people
    D. sound

23. Children like to watch science _____ movies.
    A. fiction
    B. faction
    C. fraction
    D. fallacy

24. **Identify parts of speech in brackets:** It is (between) you and me.
    A. Adverb
    B. Adjective
    C. Preposition
    D. Conjunction

25. **Identify parts of speech in brackets:** This golden ring is too (costly) to purchase.
    A. Adverb
    B. Adjective
    C. Preposition
    D. Conjunction

26. TIGER : CARNIVOROUS
    A. lion : hungry
    B. cow : herbivorous
    C. pen : write
    D. building : impressive

27. Nuclear energy is _____ dangerous to be used widely.
(A) so
(B) such
(C) too
(D) that

28. The departmental store is open _____ eight to seven.
(A) by
(B) from
(C) between
(D) during

29. We did not have _____ questions for the lecturer.
    A. none
    B. any
    C. some
    D. no

30. They went _____ the rain.
    A. despite
    B. in spite
    C. under
    D. and enjoy

Section-II Mathematics: 35 marks

1. What comes next in the sequence: 2, 4, 10, 28, ___ ?
    A. 64
    B. 70
    C. 76
    D. 82

2.

In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?
    A. 810

    B. 1440

    C. 2880

    D. 50400

3. $|2| + |-2| + (2)2 + (-2)2 = ?$
    A. 6
    B. 8

C. 10
D. 12

4. What is average (Arithmetic Mean) of the numbers: 2, 4, 5, 0, 9, 10, and 12?
    A. 5
    B. 6
    C. 7
    D. 8

5. In 3rd quadrant ?
    1. $X > 0, Y < 0$
    2. $X > 0, Y > 0$
    3. $X < 0, Y > 0$
    4. $X < 0, Y < 0$

6. How many rational and irrational numbers are possible between 0 and 1 ?
    1. Finite
    2. Infinite
    3. 1
    4. 0

7.
Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

    A. $\dfrac{1}{2}$

    B. $\dfrac{2}{5}$

    C. $\dfrac{8}{15}$

    D. $\dfrac{9}{20}$

8. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?

    A. $\dfrac{1}{3}$

    B. $\dfrac{3}{4}$

    C. $\dfrac{7}{19}$

    D. $\dfrac{8}{21}$

9. The ratio between the perimeter and the breadth of a rectangle is 5 : 1. If the area of the rectangle is 216 sq. cm, what is the length of the rectangle?

A. 16 cm

B. 18 cm

C. 24 cm

D. Data inadequate

10. The percentage increase in the area of a rectangle, if each of its sides is increased by 20% is:

A. 40%

B. 42%

C. 44%

D. 46%

11. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:

A. 39, 30

B. 41, 32

C. 42, 33

D. 43, 34

12. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

A. 564

B. 645

C. 735

D. 756

13. Considering Cosine Rule of any triangle ABC, possible measures of angle A includes

        a) angle A is obtuse
        b) angle A is acute
        c) angle A is right-angle
        d) all of above

14. For any acute angle, sine A is equal to

a) sin (180° - A)
b) sin (90° - A)
c) sin (180° + A)
d) sin (2A - 180°)

15. If a = 9.7 cm, angle B = 64° and c = 8.8 cm then area of Δ ABC is

   a) 38.36 cm^2
   b) 42.36 cm^2
   c) 25 cm^2
   d) 24.35 cm^2

16. Sum of first fifteen terms of series 5+10+20+… is

   A. 341
   B. 1023
   C. 5115
   D. 10230

17. Fifth term of sequence $a^n = 2n-3$ is

   A. −13
   B. −7
   C. 7
   D. 13

18. According to Pythagoras theorem, distance between points (-3, 8) and (8, -5) is

   a) 19.03 units
   b) 11.03 units
   c) 15.03 units
   d) 17.03 units

19. If points of straight line are M(7, 1) and N(7, 2) then line MN is

   a) horizontal line with equation with x = 1
   b) vertical line with equation with x = 2
   c) vertical line with equation with x = 7
   d) vertical line with equation with x = 7

20. Line which is perpendicular to line passing through intersection point is called

   a) triangular
   b) normal

c) trigonometrical

d) angular

21. If y = 5x + c passes through point A(5, 2) then value of 'c' is

    a) −21

    b) −23

    c) −25

    d) −27

22. If n is any positive integer then 1+3+5+…+(2n-1) =

    a) n

    b) n+1

    c) 2n+1

    d) n^2

23. Straight line equation y = x/3 + 1/4 cuts y-axis at point

    a) (0, x/4)

    b) (0, 1/3)

    c) (0, 1/4)

    d) (0, x/3)

24. Sum of an infinite geometric series exist only if condition on common ratio r is

    a) −1 < r < 1

    b) −1 ≤ r ≤ 1

    c) r < −1, r > 1

    d) r ≤ −1, r ≥ 1

25. No terms of a geometric sequence be

    a) 3

    b) 1

    c) 2

    d) 0

26. $2^1 + 2^2 + 2^3 + \ldots + 2^n =$

    a) $2(2^n - 1)$

    b) $2(2^{n-1} - 1)$

    c) $2(2^{n+1} - 1)$

    d) None of Above

27. The function $f(x) = x^3 - 6x^2 + 9x + 25$ has

   A. a maxima at x= 1 and a minima at x = 3
   B. a maxima at x = 3 and a minima at x = 1
   C. no maxima, but a minima at x = 1
   D. a maxima at x = 1, but no minima

28. The minimum value of $| x^2 - 5x + 21 |$ is

   A. -5
   B. 0
   C. -1
   D. -2

29. Maxima and Minima occur

   A. simultaneously
   B. once
   C. alternately
   D. rarely

30. The value of integral

$$\int_{-2}^{2} \frac{dx}{x^2}$$

   A. 0
   B. 0.25
   C. 1
   D. ∞

31. Integration ∫ log x dx has the value

   A. x log x - 1
   B. log x - x
   C. x(log x -1)
   D. none of these

32. Find the second derivative of $x^3 - 5x^2 + x = 0$

   A. $10x - 5$
   B. $6x - 10$
   C. $3x + 10$
   D. 3x2 – 5x

33. Find the slope of $x^2y = 8$ at the point (2, 2)

   A. 2
   B. -1

C. -1/2
D. -2

34. Differentiate $y = e^x \cos x^2$

A. $-e^x \sin x^2$
B. $e^x (\cos x^2 - 2x \sin x^2)$
C. $e^x \cos x^2 - 2x \sin x^2$
D. $-2xe^x \sin x$

35. A man travels from A to B to buy goods which he can get 10% cheaper in B than in A. If expenses of the journey are 15 and he makes a clear saving of 10, how much does he pay for the goods?

A. Rs.225
B. Rs.200
C. Rs.150
D. Cannot be determined

Section-III Physics: 35 marks

1. It is easier to roll a stone up a sloping road than to lift it vertical upwards because

    A. Work done in rolling is more than in lifting.

    B. Work done in lifting the stone is equal to rolling it.

    C. Work done in both is same but the rate of doing work is less in rolling.

    D. Work done in rolling a stone is less than in lifting it.

2. The absorption of ink by blotting paper involves:

    A.Viscosity of ink

    B.Capillary action phenomenon

    C.Diffusion of ink through the blotting

    D.Siphon action

3. If two bodies of different masses, initially at rest, are acted upon by the same force for the same time, then the both bodies acquire the same:

    A. Velocity

    B. Momentum

    C. Acceleration

D. Kinetic energy

4. Pick out the scalar quantity

A. Force

B. Pressure

C. Velocity

D. Acceleration

5. Lux is the SI unit of

A. intensity of illumination

B. luminous efficiency

C. luminous flux

D. luminous intensity

6. Point A is at a lower electrical potential than point B. An electron between them on the line joining them will

A. Move towards A

B. Move towards B

C. Move at right angles to the line joining A and B

D. Remain at rest

7. RADAR is used for:

A. locating submerged submarines.

B. receiving a signals in a radio receiver.

C. locating geostationary satellites.

D. detecting and locating the position of objects such as Aeroplanes.

8. Which of the following is used to indicate the natural tendency f an object to remain at rest or in motion at a constant speed along a straight line?

A. velocity

B. inertia

C. equilibrium

D. force

9. An object falls in absence of air resistance, its

   a) Speed increases
   b) Acceleration increases
   c) Both of these
   d) None of these

10. When a rock thrown straight upwards gets to the exact top of its path, its

    a) Velocity is zero & acceleration is zero
    b) Velocity is zero & acceleration is 10 m/s^2
    c) Velocity is 10 m/s & acceleration is zero
    d) Velocity is 10 m/s & acceleration is 10 m/s^2

11. A ball is thrown straight upwards. What kind of energy does it have at its highest point?

    a) Only potential energy
    b) Only kinetic energy
    c) both

12. Solid matter is mostly empty space. The reason solids done fall through one another is because

    a) Atoms are constantly vibrating
    b) Of nuclear forces
    c) Electrical forces
    d) None of these

13. As more lamps are put into a series circuit, the overall current in the circuit

    a) Increases
    b) Decreases
    c) Remains same

14. A negative ion has more

    a) Electrons than neutrons
    b) Electrons than protons
    c) Protons than electrons
    d) Protons than neutrons

15. Two positive charges are held near each other and then released. As they move, the force on each charge

    a) Increases
    b) Decreases
    c) Remains same

16. when the distance between two charges is cut in half, the electric force between the charges is

    a) Increased by a factor of two
    b) Increased by a factor of four
    c) Decreased by a factor of two
    d) Decreased by a factor of four

17. Surrounding every moving electron is

    a) A magnetic field
    b) An electric field
    c) Both of these
    d) None of these

18. The force of an electron moving in a magnetic field will be largest when its direction is

    a) The same as the direction of the magnetic field
    b) Exactly opposite to magnetic field
    c) Perpendicular to the magnetic force direction
    d) None of the above

19. Magnetic domains normally occur in

    a) Iron
    b) Copper
    c) Silver
    d) None of the above

20. Sound waves cannot travel in

    a) Air
    b) Water
    c) Steel
    d) Vacuum

21. if the frequency of sound is doubled, the wavelength will

    a) Cut in half
    b) Doubled
    c) Becomes 4 times
    d) No change

22. Pa(Pascal) is the unit for

    A. Thrust

    B. Pressure

C. Frequency

D. Conductivity

23. Metals are good conductors of electricity because:

A.They contain free electrons.

B.The atoms are lightly packed.

C.They have high melting point.

D.All of the above.

24. Sound travels at the fastest speed in

A.steel

B.water

C.air

D.vacuum

25. Superconductors are substances which

A.conduct electricity at low temperature

B.offer high resistance to the flow of current

C.offer no resistance to the flow of electricity

D.conduct electricity at high temperatures

26. Radiocarbon dating technique is used to estimate the age of

A.rocks

B.monuments

C.soil

D.fossils

27. Identify the vector quantity from the following

A.Heat

B.Angular momentum

C.Time

D.Work

28. One should not connect a number of electrical appliances to the same power socket because

    A. this can damage the appliances due to overloading

    B. this can damage the domestic wiring due to overloading

    C. this can damage th e electric al meter

    D. the appliance will not get full voltage

29. Electric motor is a device which converts electric energy into

A. potential energy
B. rotational energy
C. kinetic energy
D. rotational kinetic energy

30. Direction of magnetic field is governed by direction of

A. voltage
B. EMF
C. current
D. both A and C

31. If current in one coil becomes steady then magnetic field lines becomes

A. zero
B. constant
C. less than before
D. more than before

32. Values for digital signals are

A. 1 and 2
B. 3 and 4
C. 5 and 6
D. 0 and 1

33. A pipe with larger cross sectional area than other offers

A. small resistance
B. large resistance
C. equal resistance
D. variable resistance

34. In a battery, separation of charges sets up

A. potential difference
B. current
C. charges
D. resistance

35. Capacitor plates are separated by an insulator known as

A. non-metal
B. dielectric
C. paper
D. wood